

## INTERNATIONAL SEARCH REPORT

 Rec'd PCT/EP 11 MAR 2005  
 Application No. PCT/EP 02/10198

 A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 H04Q7/38 H04L12/56 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

 Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, IBM-TDB, INSPEC, COMPENDEX

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	OTT M ET AL: "An architecture for adaptive QoS and its application to multimedia systems design" COMPUTER COMMUNICATIONS, ELSEVIER SCIENCE PUBLISHERS BV, AMSTERDAM, NL, vol. 21, no. 4, 10 April 1998 (1998-04-10), pages 334-349, XP004115276 ISSN: 0140-3664 * par. 1, 2, 4, 5, 7.1 * --- -/--	1-55

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

20 January 2003

Date of mailing of the international search report

13/03/2003

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 02/10198

(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>LANDFELDT B ET AL: "User Service Assistant: an end-to-end reactive QoS architecture"            QUALITY OF SERVICE, 1998. (IWQOS 98). 1998            SIXTH INTERNATIONAL WORKSHOP ON NAPA, CA,            USA 18-20 MAY 1998, NEW YORK, NY,            USA, IEEE, US,            18 May 1998 (1998-05-18), pages 177-186,            XP010280464            ISBN: 0-7803-4482-0            * par. 1 *</p>	1-55
X	<p>US 2001/055971 A1 (KIRKIRIS NECTAR A ET            AL) 27 December 2001 (2001-12-27)              abstract            paragraph '0007!            claims 1-7</p>	1-5, 24-32, 51-55
X	<p>LE BODIC G ET AL: "Dynamic 3G network            selection for increasing the competition            in the mobile communications market"            VEHICULAR TECHNOLOGY CONFERENCE,            XP010524669            abstract            * 2.1, 2.2 *</p>	1-55
A	<p>BRUNGGGER A ET AL: "Joining forces in            solving large-scale quadratic assignment            problems in parallel"            PARALLEL PROCESSING SYMPOSIUM, 1997.            PROCEEDINGS., ILTH INTERNATIONAL GENVA,            SWITZERLAND 1-5 APRIL 1997, LOS ALAMITOS,            CA, USA, IEEE COMPUT. SOC, US,            1 April 1997 (1997-04-01), pages 418-427,            XP010216816            ISBN: 0-8186-7793-7            * par. 3, 3.1 *</p>	16,21,22
A	<p>CHAO-JU HOU ET AL: "Communication            middleware and software for QoS control in            distributed real-time environments"            COMPUTER SOFTWARE AND APPLICATIONS            CONFERENCE, 1997. COMPSAC '97.            PROCEEDINGS., THE TWENTY-FIRST ANNUAL            INTERNATIONAL WASHINGTON, DC, USA 13-15            AUG. 1997, LOS ALAMITOS, CA, USA, IEEE            COMPUT. SOC, US,            13 August 1997 (1997-08-13), pages            558-564, XP010247361            ISBN: 0-8186-8105-5            * par. 1-4 *</p>	1-55

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 02/10198

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01 50790 A (NOKIA OYJ ;PAILA TONI (FI); XU LIN (FI)) 12 July 2001 (2001-07-12) abstract figure 4 page 1, line 1 -page 1, line 30 page 2, line 31 -page 3, line 36 page 6, line 6 -page 8, line 22 page 9, line 27 - line 34 -----	1-55

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 02/10198

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 2001055971	A1	27-12-2001	AU	7683901 A	08-01-2002
			CN	1383490 T	04-12-2002
			WO	0201238 A1	03-01-2002
WO 0150790	A	12-07-2001	FI	992850 A	01-07-2001
			AU	2521201 A	16-07-2001
			EP	1247407 A1	09-10-2002
			WO	0150790 A1	12-07-2001

ges. 10.02.05 udl  
PATENT COOPERATION TREATY

REC'D T/PTO

11 MAR 2005

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

HOFFMANN EITL  
Arabellastrasse 4  
D-81925 München  
ALLEMAGNE

EINGEGANGEN

09. Feb. 2005

HOFFMANN EITL MÜNCHEN  
PATENT- UND RICHTANWÄLTE

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

08.02.2005

Applicant's or agent's file reference  
93 500 a/se

IMPORTANT NOTIFICATION

International application No.  
PCT/EP 02/10198

International filing date (day/month/year)  
11.09.2002

Priority date (day/month/year)  
11.09.2002

Applicant

DOCOMO COMMUNICATIONS LABORATORIES EUR.GMBH et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 93 500 a/se	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 02/10198	International filing date (day/month/year) 11.09.2002	Priority date (day/month/year) 11.09.2002
International Patent Classification (IPC) or both national classification and IPC H04Q7/38		
Applicant DOCOMO COMMUNICATIONS LABORATORIES EUR.GMBH et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 16 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand  07.04.2004	Date of completion of this report  08.02.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Falò, L  Telephone No. +49 89 2399-7108 	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 02/10198**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

5-33, 35-42 as originally filed  
1-4, 4a, 34 received on 02.12.2004 with letter of 02.12.2004

**Claims, Numbers**

1-49 received on 02.12.2004 with letter of 02.12.2004

**Drawings, Sheets**

1/16-16/16 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☒ the claims, Nos.: 50-55  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 02/10198**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-49
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-49
Industrial applicability (IA)	Yes: Claims	1-49
	No: Claims	

**2. Citations and explanations**

**see separate sheet**



**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

✓ D1: OTT M ET AL: "An architecture for adaptive QoS and its application to multimedia systems design" COMPUTER COMMUNICATIONS, ELSEVIER SCIENCE PUBLISHERS BV, AMSTERDAM, NL, vol. 21, no. 4, 10 April 1998 (1998-04-10), pages 334-349, XP004115276 ISSN: 0140-3664  
✓ D3: US 2001/055971 A1 (KIRKIRIS NECTAR A ET AL) 27 December 2001 (2001-12-27)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of Claim 1 does not involve an inventive step in the sense of Article 33(3) PCT with respect to documents D1 and D3.

In fact document D1 (see in particular "Introduction", first five paragraphs, "Qos architecture", "Network bandwidth allocation with dynamic Qos support", first three paragraphs) discloses, according to most of features of Claim 1, a method of providing at least one bearer service through a wireless network for at least one application running at a mobile endpoint ("Introduction", third, fourth and sixth paragraph), characterized by the steps of detecting an operational context as characteristics of the mobile endpoint, of the at least one application running at the mobile endpoint, of application data to be transferred, and/or availability and capability of the at least one bearer service ("Network Bandwidth Association with dynamic Qos support", third paragraph); and dynamically selecting at least one bearer service ("Network bandwidth allocation with dynamic Qos support", first three paragraphs).

It is noted that the detection of the operational context can be made in D1 either automatically ("implicitly", depending on the needs of the running application), or by the user ("explicitly", using a "Service Meter"): see D1, "3.4: Explicit vs implicit Qos control", second paragraph, and "4. Network bandwidth allocation with dynamic Qos support", third paragraph.

It would be clear to the person skilled in the art that this method suffers from a

significant drawback, deriving from the fact that it does not foresee the possibility of setting up and tearing down wireless connections based on the chosen bearer service; this may limit the flexibility of the system, especially if the available network is an heterogeneous wireless network.

In consulting the prior art he/she would become aware that in the method disclosed in D3 (see in particular "1. Introduction", first paragraph, and "2.2. Conceptual Framework", second paragraph), disclosing the features of the network being a heterogeneous network, and of setting up/tearing down related wireless connections provided through the heterogeneous wireless network according to the determined operational context, in order to provide the desired Quality of Service.

It is noted that the possibility of selecting different service providers depending on the requested Qos changes is already indicated in D1 ("Qos Architecture", third paragraph, last sentence), and that D1 already both implicitly und explicitly mentions wireless system ("Introduction", third paragraph, and page 339, left column, last but one paragraph).

The skilled person would therefore find it obvious, starting from the method disclosed in D1 and aware of the disclosure of D3, to apply the approach described in D3, thereby arriving at the method corresponding to the subject matter of Claim 1.

The subject matter of Claim 1 lacks therefore an inventive step (Article 56 EPC) with respect to documents D1 and D3.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of Claim 25 does not involve an inventive step in the sense of Article 33(3) PCT.  
In fact, independent Claim 25 discloses an apparatus corresponding to the not novel method of Claim 1, whereby all method steps are replaced by apparatus features.
4. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent Claim 49 does not involve an inventive step in the sense of Article 33(3) PCT.

In fact, independent Claim 49 discloses a computer program with code means adapted to implement the steps of the either not novel, either not inventive methods disclosed in the Claims 1-27.

5. The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of dependent Claims 2-24 and 26-48 does not involve an inventive step in the sense of Article 33(3). In particular:
  - 5.1 The features of Claims 2-10, 12, 15-18 and 21-24 are either trivial, either matter of normal procedural design for the person skilled in the art.
  - 5.5 The negotiation step of Claim 11 is disclosed in documents D1-D4 (see 6.2), while the updating step is a matter of normal procedural design.
  - 5.6 In Claim 13 the step of assigning application to bearers in order of application priority is trivial in a priority-based system. See, for example, D1, "Adaptive scheduling with task cooperation", par. 3.
  - 5.7 The features of steps 14, 19 and 20 (evaluating a cost function, setting up a cost matrix and applying a linear assignment algorithm to the cost matrix) are among the well-known design possibilities in the field of scheduler design. See, for example, document D5, par. 3 and 3.1.
  - 5.8 Claims 26-48 disclose apparatuses corresponding to the not inventive methods of Claims 2-24, whereby all method steps are replaced by apparatus features. Hence, the same objections apply.

The subject matter of Claims 2-24 and 26-48 therefore lacks an inventive step (Article 33(3) PCT).